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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,761	03/10/2004	Roger F. Buelow II	2510	4240
7617	7590	01/06/2006	EXAMINER	
BRUZGA & ASSOCIATES 11 BROADWAY, SUITE 715 NEW YORK, NY 10004			STEIN, JAMES D	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 01/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/797,761

Applicant(s)

BUELOW ET AL.

Examiner

James D. Stein

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on amendments filed 10/21/05 and 12/15/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 and 18-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-7 and 18-31 is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1005</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

This Office Action is in response to the amendment filed on 10/21/05, and the additional amendment filed on 12/15/05 as a result of the telephone conference (concerning USPAT 6,714,711 to Lieberman et al.) on 12/07/05, which has been fully considered and entered. Claims 1, 3, 18, 23 and 28 have been amended, claims 8-17 have been cancelled and new claims 30-31 have been added. Claims 1-7 and 18-31 are now pending in the application.

#### *Information Disclosure Statement*

The prior art documents submitted in the Information Disclosure Statement filed 10/21/05 have been considered and made of record (see attached copy of corresponding PTO-1449 form).

#### *Response to Amendment and Arguments*

Applicant's arguments filed 12/07/05 in view of the amendments to the claims have been considered but are not found to be persuasive for the following reasons:

In the remarks applicant argued that since Lieberman teaches that two distinct features (a "varying refractive index" and a "distribution of scattering centers") contribute to the uniformity of side-light emission, Lieberman teaches away from the claimed invention ("distribution of scattering centers" without "varying refractive index"). This argument is not persuasive. These features are independent from one another (col. 5 lines 18-21, as stated by applicant) and *each taken alone contributes to the uniformity of the side-light emission*. Since the Naum reference of record discloses using only light-scattering centers within the core of a side emitting light pipe, it would have been obvious at the time of the invention to one of ordinary skill in the art to modify

Naum such that the light scattering centers are distributed with a non-zero density gradient along the longitudinal axis of the light pipe, in order to increase the uniformity of the side-light emission. Since Naum makes no reference to any type of varying index of refraction distribution, it would have been obvious to include the “scattering center” feature of Lieberman *only*, not the “varying refractive index” feature, at the time of the invention.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art [USPAT 5,579,429] to Naum, and further in view of [USPAT 6,714,711] to Lieberman et al., both of which disclose related side-light emission optical devices.

With regard to claim 1, Fig. 4 of Naum shows a light pipe 64 with uniform side-light emission 74 comprising a polymer core 68 (entire document and col. 13 line 54, Teflon is a well-known polymer) and a fluoropolymer cladding 70 (FEP, col. 10 lines 43-46) on the core 68; and a light-scattering material 72 distributed within the core 68 along an active section of the light pipe 64 in which side-light emission is desired (in this case, the segment of light pipe shown in the figure); the light scattering material being distributed along the core 68. Fig. 4 shows the

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light 66 substantially propagating along the length of the light pipe, indicating the refractive index of the core 68 is greater than that of the cladding 60.

Therefore, Naum discloses the claimed invention except for the light-scattering material being distributed with a non-zero density gradient along a longitudinal axis of the light pipe to achieve uniform side-light emission. Fig. 6 of Lieberman shows a uniform side-light emission waveguide wherein light scattering particles 28 are distributed with non-zero density gradient along a longitudinal axis of the waveguide. Lieberman teaches that this feature increases the uniformity of the side-light emission 42 (col. 2 lines 11-16, col. 5 lines 5-21). Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art to modify Naum such that the light scattering material was distributed with a non-zero density gradient along a longitudinal axis of the light pipe in order to achieve more uniform side light emission along the entire length of the pipe. It is noted that this feature would not cause any significant variation of the refractive index taken along the longitudinal axis of the core 68, as claimed by applicant.

With regard to claim 2, in addition to the rejection of claim 1 previously discussed above, Naum discloses the light-scattering particles to be titanium dioxide (col. 4 line 64 col. 9 lines 43-45; col. 10 line 8, etc.).

***Allowable Subject Matter***

Claims 3-7 and 18-31 are allowed.

None of the cited prior art discloses or suggests the light-pipe with uniform side-light emission further comprising light-scattering material being distributed in the core of the light pipe, substantially only in a radial swath along the longitudinal axis of the pipe, of substantially

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less than 360 degrees (or 180 degrees), so that light exits the light pipe from the radial swath. The most relevant prior art, the Naum reference, discloses a light-scattering material distributed throughout the entire core along the longitudinal axis of the light pipe, rather than just a radial swath. The Imamura et al. reference, which is also relevant, discloses a light scattering material distributed in the cladding of a light pipe in a radial swath (about 90 degrees or less) along the longitudinal axis of the fiber. However, there is no suggestion or motivation in these references that a distribution of light-scattering material within a radial swath of substantially less than 360 degrees (or 180 degrees) in the *core* of a light pipe along the longitudinal axis of the pipe would yield uniform side-slit emission. Therefore, the claimed subject matter is allowable over the prior art.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to James D. Stein whose telephone number is (571) 272-2132. The examiner can normally be reached on M-F (8:00am-4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



James D. Stein  
Patent Examiner, AU 2874



SUNG PAK  
PRIMARY EXAMINER